

HABITAT SURVEY

In Britain there is a tradition of habitat survey, within which can be found examples that meet the criteria above, and so there has been successful use of such survey material in statutory plan preparation, the control of development, and the selection of sites for designation as nature reserves (although in the latter opportunism must always play a role too). Such surveys are essentially of vegetation, as it is this that defines the habitat for many other species.

In habitat survey there must always be a compromise between the two aspects of completion; geographic coverage can be promoted at the expense of the detail documented on each site, and vice versa. Coverage of the United Kingdom is far from complete for even the most basic level of habitat survey - 'Phase I' or 'Field-by-Field' survey (as defined by NCC), yet in our experience in London, stable planning judgements depend on appreciably more data about each site than is provided by this basic level of survey. Our survey had more detailed mapping of habitats; it covered dominant and notable species and included assessments of species-richness, and most judgements based on it stand up to consultation with experts and interest groups. We would not expect Phase I to perform nearly as well.

'Phase II' (NCC term) survey is even more detailed than this London example and it provides ample data to justify planning decisions, but few agencies have been able to afford such detail in a comprehensive survey, and when phase II is done on sites chosen without adequate data the subsequent evaluation must be partial.

Space does not allow us here to go into details of methods of habitat surveys. NCC gave us considerable help in writing the specification for our own survey, and we, and doubtless others, are happy to provide advice based on our own experiences. An excellent manual on Phase I survey methodology was drafted by NCC some time ago; when this becomes available it will define the basic requirements.

Thus we see examples of the problem solved, but in most areas the data are not available, or those which are available fall short of the quality desired, as sufficient resources have not been available for survey, or the compromise has been drawn too far towards geographic coverage, or towards detail on any one site.

Nevertheless, in an international comparison, we may take pride in the achievement of British habitat surveys; few other countries have even as much information as Britain.

SPECIES-RECORDING

We do not consider the position of species-recording is nearly so good. Many species-recording schemes fail to meet any of the criteria listed above; coverage is usually far from complete; the extent of searching effort at each site is rarely documented, but is usually uneven; and geographic precision is often poor. These problems are such that it is rare to find species' records that serve any more precise purpose in planning than to provide a coarse definition of regional distribution. To improve on this, and meet the requirements outlined above, species-recording must shake off the yoke of outmoded tradition.

Many local recording schemes have recognised that it is restrictive to collect data solely from arbitrary grid-squares; such squares rarely correspond at all well with natural units, or with areas under planning consideration and so fail to meet the criterion of precision (see above). The solution lies in the use of small, homogenous and flexible recording units.

Small, because this permits flexibility in use; small units can be added together, but larger ones cannot be subdivided.

Such units do not preclude the preparation of grid square maps as, if the units are much smaller than the grid squares, most can be unambiguously allocated to a square and those that cannot will lie wholly very close to the arbitrary boundary where mis-allocation will hardly matter. Similarly, small units are much more likely than large ones to fall wholly within an area under planning consideration.

Homogenous, because this promotes association of the species data with habitat data and the two together greatly assist understanding. For example, interesting grassland plants may survive around hedgerows, while the fields between generally lack any interest, but the data would not show this unless they were listed separately for field and field-edge.

Flexible, because the available resources or commitment may dictate considerable variation in the detail which it is realistic to collect. Also taxa differ in what may be seen as a naturally homogenous area: for birds this may be a whole woodland; for vascular plants, much smaller areas differing in growing conditions; and for bryophytes and lichens the areas may be individual tree trunks.

In many recording schemes all that is noted is the identity of each species in each recording unit. Such records greatly restrict interpretation, as they indicate neither the abundance nor the status of the taxa and, of course, absence cannot be proved with the same ease as presence. We see the solution in the recording of the search effort, and the abundance and status of each species.

Recording the search effort, because this permits coarse quantitative measures, such as numbers of individuals or of species recorded per unit effort. All other things being equal, the number of individuals found will increase linearly with the search effort. The number of species increases asymptotically (Dawson 1981).

For organisms that are sedentary and conspicuous a close approach to the asymptotic (or 'full') species list may be quickly acquired (this would be so for higher plants on a small site in the height of the field season). Other organisms may be much more difficult to prove on a given site, through being mobile, inconspicuous, seasonal, etc. For such groups, including even birds and butterflies, the length of the species' list from a site is of little value without some idea of the extent of the search that went into acquiring the list.

For example, we were recently told about a field in the London suburbs where 23 butterfly species had been recorded. This is an exceptionally good list for a site of this size, habitat and position, and one is tempted to rate the area as of considerable local nature conservation importance. However this field is adjacent to a university, and perhaps a staff member has recorded here over several years so as to sight very infrequent and temporary visitors such as the clouded yellow. Without knowing how the list has been accumulated the site cannot be assessed adequately.

Recording the abundance of species, because it is easy thereby substantially to improve on the information provided by presence-only records. Even the coarsest measures of abundance, such as timed counts of birds or eye-estimates of cover in plants, allow one to distinguish the odd rare occurrence from an extensive distribution or dominant status. Making such distinctions is of considerable importance when using a list of species to evaluate a site.

For example, we had to evaluate the grasslands of the grounds of an old hospital on the southern fringe of Greater London, at short notice, in time for a Local Plan Inquiry in the winter.

Evaluation proved very difficult, despite the existence of a long list of vascular plants from the site, as we did not know whether the several chalk grassland species were widespread and abundant at the site, or scattered remnants of a rich flora now depleted.

Recording the status of species, because this too promotes interpretation. Items to record may include the stature of trees and proof of breeding in animals.

As with habitat survey, there is a trade-off in species survey between detail and coverage. We would not suggest such stringent application of our suggestions on species recording as to put off the amateur recorder, indeed the mark of a successful scheme is that it is fun to do. For a British example of the use of quantitative measures, the recently completed winter bird atlas (Lack 1986) is a good example of technique. Figure 1 reproduces part of a plant recording scheme which used small, flexible recording units, and measures of abundance and phenology; it was used successfully in a New Zealand National Park. The greatest impediment to the use of such ancillary data is not the inability or reluctance of the practitioners to record such detail, but rather the greater effort needed to keep and analyse the information provided.

MONITORING

The requirements for monitoring are somewhat different from those of the evaluation of sites, for here an adequate statistical sample will suffice to demonstrate a trend, so that the requirement for geographic coverage can be relaxed.

First, it is clear that the up-dating of a comprehensive survey, may be done at the same time as monitoring; given the need for up-to-date information it would therefore be wasteful to survey purely for monitoring. Second, geographic precision is of vital importance for monitoring, as the measurement of trend is much more precise if one can be assured that identical areas are being compared over time. Third, consistency is necessary so that change is measurable.

<i>Dryidium isifolium</i> pygmy pine			<i>Pennantia corymbosa</i> kaikomako		
<i>Dactyloctenium aegyptium</i> wooden rose			<i>Pentachondra pumila</i>		
<i>Dracophyllum filifolium</i> inaka	P	D	<i>Peraxilla colensoi</i> (<i>Elytranthe colensoi</i>) red mistletoe		
<i>Dracophyllum strictum</i>			<i>Peraxilla tetrapetala</i> (<i>Elytranthe tetrapetala</i>) red mistletoe	I	R
<i>Dracophyllum cubulatum</i>			<i>Parnettia macrostigma</i> wiry snowberry		
<i>Elaeocarpus dentatus</i> hinau			<i>Phoridium cookianum</i> (<i>Phoridium colensoi</i>) mountain flax		
<i>Elaeocarpus hookerianus</i> pokaka			<i>Phoridium tenax</i> flax		
<i>Specris alpina</i>			<i>Phyllocladus alpinus</i> mountain toastoe	P	V
<i>Fuchsia excorticata</i> fuchsia					
<i>Gaultheria antipoda</i> snowberry	A	D			

EXTRAS

<i>Lycopodium scariosum</i>	P	V		
<i>Pyrosia serpens</i>	P	V		

TREES AND SHRUBS

GRID REFERENCE EAST 27293 NORTH 62194

LOCALITY 200 m along Whakapapanui track from Park H.Q.

OBSERVER D.G. DAWSON DATE 9 8 79

ALTITUDE (metres) 1125

TOPOGRAPHY (cross-section) Flat Hill Terrace Valley bottom Side Ridge Other (specify)

SLOPE N NE E SE S (order)

HABITAT Beech forest

SPAN OF SITE (m) 20 NUMBER OF SPECIES 25

- PLANT SPECIES LIST
- ABUNDANCE
- 1- One: just one plant or patch in the recording area
 - P- Present: more than one plant or patch but less than one tenth of the ground shaded by the species
 - A- Abundant: more than one tenth of the ground shaded by the species.
- REPRODUCTION
- V- Vegetative growth (not flowering or fruiting)
 - B- Flower buds present
 - F- Flowers open
 - G- Green fruit, seed or cone
 - R- Ripe fruit, seed or cone
 - D- Fallen fruits or empty seed heads

Figure 1. Parts of a recording form used for trees and shrubs in Tongariro National Park, New Zealand (Dawson 1979), embodying the use of small, flexible recording areas and the documentation of abundance and phenology.

SITES FOR SOCIAL NEED

In London we have seen the need to provide nature conservation sites for people, as much or more than for their intrinsic wildlife value. To do this adequately one requires a survey base of social needs to parallel that on biota: something that we do not have. Recent work has begun to document public attitudes to the use of open space, but we are far from being able to map these needs. In the interim we have adopted some approaches to site evaluation that should promote their utility to the public.

We use the usual criteria, such as size, diversity, rarity and traditional character, but have added some more, such as public access and proximity to residential areas. We have also adopted an hierarchical classification of sites on the basis of areas of search, to try to ensure that no small area of the metropolis is without a nearby accessible site of some nature conservation value.

The top level in the hierarchy is the 'Site of Metropolitan Importance', each of which is of value to an area of London larger than one London Borough, through its high intrinsic value, its geographic position, or both. The next level is the 'Site of Borough Importance', which includes all Metropolitan Sites but also others that are the best available in that particular London Borough.

The next level is the 'Site of Local Importance' which comprise the best available remaining sites chosen so that, where possible, no London area is further than one kilometre from a recognised site with public access. Thus the accessible Metropolitan and Borough Sites serve as Local Sites too. Finally, all other sites surveyed comprise a residual category. For an illustration of the working of this system see figures 9-11 of the GLC Ecology Handbook No 3 (Anon 1985), or the accounts of the London Boroughs of Lewisham, Barnet, Brent and Hillingdon in handbooks 4 (Anon, 1986), 5 (Game, 1987) and 7 (Farino and Game, 1988).

These search areas are not based on biogeography, and doubtless a slightly different selection of sites would be made were the boundaries of Greater London, or of the London boroughs, different from those we now have. However, given the need for search areas, the use of administrative boundaries has an advantage over other arbitrary boundaries; the search areas coincide with Local Planning areas.

A consequence of this selection system is that the categories no longer simply reflect intrinsic interest. For example there may be a site in a borough richly endowed with nature conservation areas that fails on intrinsic quality to qualify as a Borough Site, and also as a Local Site, through being close to a Borough or Metropolitan Site with public access. Yet it may be of greater intrinsic importance than a Borough site in another borough less well endowed with such areas.

PRIORITIES, GIVEN RESOURCE CONSTRAINTS

Resources for professional survey are very limited. The London habitat survey is one of the very few completed quickly and purely funded by a Local Authority; most surveys are piecemeal efforts using grant-aid over many years or conducted as part of a Manpower Services Commission scheme. Amateur interest in species (not in habitat) survey is considerable, but the scope for such survey is effectively infinite, so that the effort needs to be focused, if it is to prove useful for nature conservation planning.

First priority must go to habitat survey, which can provide the basic ingredients for good planning decisions within a minimal budget. Ensuring that these data are comprehensive and up-to-date is beyond the resources currently devoted by Local Government anywhere in the United Kingdom, to our knowledge, so usually the application of substantial Local Government resources to other survey would be inappropriate. On a more positive note, the extensive body of comprehensive survey data available in the United Kingdom may seem less than adequate to us, but it is the envy of European agencies.

Amateur effort is much more difficult to direct, as there is a considerable momentum in the presently inadequate recording effort, and any new directions must not ignore the essential ingredient for success: that surveying must be fun. Nevertheless there is considerable scope for the collection of amateur records along the lines outlined above, which would more nearly match the need for data for planning, and also complement the data of habitat surveys. Should grant-aid for amateur recording be made contingent on the data being properly kept and on the adoption of the features listed above, there would be an immense improvement in the utility of the product.

DATA ALONE ARE NOT ENOUGH

Most planners cannot use raw data; they need to know that the data are there to back up the expert judgements that they accept, but they will rely upon the experts to make those judgements and to be there when required to justify those judgements. Even the publication of a comprehensive nature conservation strategy in terms of sites selected by experts and subject to public consultation will not suffice to meet all planning needs. Inevitably, developments are proposed which require expert judgement to evaluate; they may be marginal to a site of acknowledged importance, or claimed not to be damaging in their effect, or on a site not yet recognised in formal plans, but one highly regarded by nearby residents.

For reasons such as these, and also to keep the survey information up-to-date, to carry out monitoring and to make the information available to other interested parties it is essential that a database be serviced by expert staff.

FINDING THE RESOURCES

In this paper we have outlined systems for obtaining and using data for nature conservation planning, but nowhere do all the elements of what we have described exist. We do not believe that the resources will be found to implement this ideal without a greater commitment to nature conservation planning by local government. This in turn will not come about without a directive from central government; only if local government is charged with a duty to collect, hold and use such data (or to see that such data are collected, held and used) will the resources be found to meet the minimal needs we have outlined above. Compared with other resource and information needs of local government this extra commitment would be miniscule and it would result in a greatly enhanced recognition of nature conservation in the planning system.

It is interesting to note that the Council of Europe recently recommended that member States (which include U-United Kingdom) speed up local inventories of habitats and provide detailed information on their flora and fauna together with data on present land uses (Council of Europe 1987). Will this recommendation lead to adequate resources being allocated to British work?

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THE INVOLVEMENT OF ECOLOGICAL/NATURE CONSERVATION
CONSULTANTS IN DEVELOPMENT AND PLANNING ISSUES

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(based on the paper presented at the NFBR 1987 Bristol
Conference)

Introduction

In recent years there has been a great increase in environmental awareness amongst the general public and through to Government. One consequence of this is that wildlife and nature conservation considerations are increasingly being drawn into decision-making relating to development control, the management of land and other land use planning issues.

The increasing demand for advice on nature conservation matters has led to a tremendous growth in the number of consultants offering ecological/nature conservation advice. Often these are individuals or small firms, although there is also a small number of larger companies, the staff of which cover a range of disciplines including ecology and nature conservation. Land Use Consultants (LUC), established in 1966 under the chairmanship of Max Nicholson, is such a company. As a multi-disciplinary environmental consultancy, LUC covers the core disciplines of ecology, landscape architecture, urban design, planning and land management, and undertakes a wide range of work ranging from large scale planning and environmental impact studies (for example, as the Government's assessors of the Channel Fixed Linked EIAs) to small community schemes (such as the William Curtis Ecological Park).

A common thread between all consultants working in the field of nature conservation is that there is no one professional body which covers their interests. This is one of the issues relating to professionals in nature conservation which the British Association of Nature Conservationists (BANC) is currently investigating (Woods, 1987). As a member of BANC Council, I have been involved in these discussions.

The absence of a professional body may be one reason why there is no recognised title for consultants involved in nature conservation or indeed for others professionally working in nature conservation. Clearly nature conservation itself is a broad subject - those involved may, for example, be carrying out survey and evaluation, site design, management planning, administration and promotion (e.g. county wildlife trust directors and development officers) or policy development. These activities require a range of skills, but for those involved in work such as wildlife

survey and evaluation, site design and management plans, an ecological background is the norm. However, for these people the description 'ecologist' seems inappropriate as it fails to convey the subjective element of the work of those involved in nature conservation, especially with regard to evaluation (which is nature conservation evaluation not ecological evaluation) or the social aspects (for example for those involved in urban nature conservation). Perhaps 'ecologist' has been adopted as a title in order to give the 'profession' an element of respectability? Is it not time, then, that the term ecologist is dropped and replaced by something more meaningful and less aloof? In the remainder of this paper the phrase nature conservation advisor is used instead of ecologist, with those working as consultants referred to as consultant nature conservation advisors.

This paper considers several issues relating to the work of consultant nature conservation advisors, as this relates to biological (or probably more appropriately wildlife) recording. These are:-

- i) Site and species information - practical considerations
 - ethical considerations
- ii) The role of consultants

Site and Species Information

Consultant nature conservation advisors can become involved in a wide range of projects, and, although it is difficult to generalise, these can broadly be divided into three categories (all of which can involve nature conservation evaluation):

- a) research and survey;
- b) preparation of site or area based design/management proposals (including management planning; derelict land reclamation, etc.);
- c) involvement in development proposals (including environmental impact assessment, development control and planning).

As part of these studies, the consultant will often carry out site survey work, especially of vegetation. However, there is rarely the time (or the money) to carry out detailed surveys of a wide range of taxa - and never of all taxa. Furthermore timescales invariably prevent surveys being undertaken across the four seasons. For example, it may be possible to collect bird data during the survey period (perhaps the spring/summer) but this is unlikely to give a good picture of the way in which birds use the site

(with no data about use for winter roosting or during cold weather). In order for the consultant to be in the best possible position to comment on the site it is therefore important that as much relevant information is collected as possible. For this reason, consultant nature conservation advisors will often approach biological records centres, county wildlife trusts, local natural history societies and others in their search for data. The need to approach so many different bodies rather than just one is clearly an issue in itself, although a more important problem is that information is often not available in a readily usable form; sometimes it is not held on a site by site basis; and often there is no information available at all. Conversely, for the county wildlife trust or biological records centre, an approach by a consultant raises other problems. Firstly, on practical grounds, there is the question of how much time they should invest in the inquiry and how much they should charge. Secondly, there are 'ethical' considerations, relating to the way in which the data is to be used. Ethical considerations also arise for consultants in terms of how they use the data.

Practical Considerations

In the first instance it is useful to investigate the type of information which a consultant is likely to require, and how this might best be provided. Ideally, species information should be held in such a way that it can be retrieved on a 'site by site' basis. This raises issues about the size of a 'site', and in this regard, species records should be described with a six figure, or better still eight figure grid reference. With information stored on a computer on a grid reference basis, it should be straightforward to extract records for, say, a 1 square km unit - allowing the consultant to use records from within this data set which are relevant to the site of interest. However, it is not only species records which will be of interest to the consultant. Research studies, management plans or other pieces of work referring to the wildlife of a site or area are also likely to be of interest. It would therefore be valuable for biological records centres to hold inventories of such studies, which should be easy to access when an enquiry is made about a specific site. This is a proposal which BANC put to the NFBR at the time of the NFBR's inception.

At present, centres which hold comprehensive species records and inventories of research and other studies for a particular county (or other defined area) are rare, if not non-existent. However, such a service is required by those involved with nature conservation, whether in a statutory, voluntary or consultancy capacity. In terms of co-ordination, and for those using the service, it makes good sense for it to be based at a single centre in each area, rather than to be dispersed between record centres, county trusts and others. Perhaps the best arrangement would be to have a single records centre in each

county (or Scottish Region). This though, begs the question of who should run the service. In some areas local authorities run the record centres, whilst elsewhere the county wildlife trusts are the main agency involved in storing wildlife information.

The role of local authorities in nature conservation has recently been laid down in DoE Circular 27/87. To perform their role effectively it is essential that authorities have access to information on species and sites, and as major users of such information there is a strong case for them to fund record centres (as indeed is already often the case). Indeed financial support to record centres is one indication that local authorities are taking nature conservation seriously. Voluntary bodies such as county wildlife trusts might provide an important 'stop-gap' before a local authority based initiative is launched, although their primary objective should always be to lobby the authority to develop its own system.

Like numerous existing record centres, it makes good sense for a records centre to be an arm of the county (or regional) council, perhaps linked to the museums service, with funding from the county/region and also the district authorities. All of the funding councils should then have free access to the data bank. Voluntary bodies should also have free access to the system, as they provide much of the raw data, whilst others, including consultants, should have to pay fees, which would contribute to the running of the centre. In return for information received, consultants should also be required to pass on any original data they collect. Fees might relate to units of information; for example a fixed fee per square kilometre might be paid for basic information about sites known to have wildlife interest and another fixed fee would be payable for more detailed species information relating to a specific square kilometre. The fees should not though reflect the costs of data collection, as this is largely a result of the efforts of volunteers, who enjoy their natural history pastime, or of people funded from the public purse, whether by the Nature Conservancy Council (NCC), local authorities or the Manpower Services Commission. A nationally applicable scale of fees could be adopted and this would allow consultants to make appropriate provision for such expenditure within their project budgets. However, too high a fee level could result in the records centres being underused, as consultants' clients might not be prepared to spend large sums of money on wildlife related issues.

It would be beneficial if the fee income together with grant aid were sufficient to allow the centres to be well manned and to undertake original survey themselves or to have funds available to commission surveys. Such efforts could be concentrated on sites for which scant records are available. The identification of such sites would be one of the key benefits of having single county/region based records systems.

Establishment of records centres as described above is still a long way off in many counties. Voluntary bodies could help to speed the development of a nationwide series of such records centres by 'lobbying' their local councils. The NFBR clearly has a role too, and NCC could also play an important part by explaining to local authorities the importance of record centres and, possibly by providing grant-aid for certain initiatives.

Ethical Considerations

In handing over data to consultants, staff from records centres, county trusts and other organisations are often fearful that the self-same data will be used to support development on a site of nature conservation value. This dilemma begs the question of what are the ethics of consultant nature conservation advisors when they are involved in development issues.

In considering this, it is important to clarify how a consultant nature conservation advisor should operate when dealing with development issues. In the absence of a unifying professional body there are no guidelines for the way in which such consultants should operate. Nevertheless it is my belief that standard guidelines should be adopted with respect to the basic way in which such consultants operate.

These guidelines should incorporate the following sequential procedure:

- i) describe the wildlife of the site, or of adjacent areas which may be affected by the development;
- ii) assess the likely impact of the development on habitats and species present on the site or on other areas which may be affected by the development (ecological impacts);
- iii) assess the implications of these impacts in nature conservation terms (nature conservation impacts);
- iv) discuss with the client how, if the development were to go ahead, its impact could be ameliorated. If changes in design are adopted, identify what the new impacts will be.

The two potentially controversial elements of this approach are: the assessment of likely ecological impacts; and the assessment of how important these impacts are in nature conservation terms. In view of our limited knowledge of the ecology of different species and habitats, it is quite possible for 'experts' to disagree about ecological impacts - especially when the impacts are difficult to quantify (for example the effects of recreation on a bird population).